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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,456	01/05/2001	Frederic Delbac	1566-00	5009

7590 10/02/2003

IP Department
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EXAMINER	
NAVARRO, ALBERT MARK	

ART UNIT	PAPER NUMBER
1645	

DATE MAILED: 10/02/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)
09/755,456	Delbac et al
Examiner	**Art Unit**
Mark Navarro	1645

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on _____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *2, 4, 5, and 33-35* is/are pending in the application.

4a) Of the above, claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *2, 4, and 33-35* is/are rejected.

7) ☒ Claim(s) *5* is/are objected to.

8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some* c) ☒ None of:

1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

*See the attached detailed Office action for a list of the certified copies not received.

14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

a) ☐ The translation of the foreign language provisional application has been received.

15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
4) ☐ Interview Summary (PTO-413) Paper No(s). _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

REQUEST FOR CONTINUED EXAMINATION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114.

Additionally Applicants amendment filed on July 28, 2003 has been entered. New claim 35 has been added, consequently claims 2, 4-5 and 33-35 are pending in the instant application.

Claim Objections

1. The objection of claim 5 under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim is withdrawn in view of Applicants amendment.

Claim Rejections - 35 USC § 112

2. The rejection of claims 33-34 under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for immunogenic compositions comprising the purified microsporidian polar tube protein, does not reasonably provide enablement for

pharmaceutical/vaccine compositions comprising the purified microsporidian polar tube protein, or pharmaceutical/vaccine compositions comprising a fragment of the polar tube protein is maintained. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Additionally this rejection is applied to newly added claim 35.

Applicants are asserting that claims 33-34 have been amended to remove the use of the term "vaccine" and as a result have clearly defined the unique immunogenic properties of the Applicants' protein.

Applicants arguments have been fully considered but are not found to be fully persuasive.

Applicants arguments are not found to be fully persuasive in view of Applicants claim language.

Claim 33 recites a "pharmaceutical" composition which "prevents" infections... Applicants claim still requires a protective immune response to be generated. As set forth previously, Plotkin et al have already set forth that "The key problem is the identification of that protein component of a virus or microbial pathogen that itself can elicit the production of protective antibodies... and thus protect the host against attack by the pathogen." Applicants claim language still does not overcome this problem set forth by Plotkin. Will the protein elicit a protective response or will the protein merely elicit an antigenic response? The answer is simply unpredictable as evidenced by Plotkin.

Facts that should be considered in determining whether a specification is enabling, or if it would require an undue amount of experimentation to practice the invention include: (1) the quantity of experimentation necessary to practice the invention, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. See In re Wands, 858 F.2d 731,737, 8 USPQ2d 1400, 1403 (Fed. Cir. 1988). The Federal Circuit has noted, however, that only those factors that are relevant based on the facts need to be addressed. See Enzo Biochem. Inc. v. Calgene, Inc. 188 F.3d 1362, 1371, 52 USPQ2d 1129, 1135 (Fed. Cir 1999).

As shown above Factors 2- 3 are lacking, Factors 1, 4-5 and 7 are all unpredictable based on the teachings of Plotkin et al.

Since no working examples are set forth in the specification that the claimed polypeptides are useful for preventing infection and the art teaches of the unpredictability of using a single antigen for protection it would be an undue burden and be unpredictable to use the broadly claimed product for protection.

For reasons of record in Paper Number 15, as well as the reasons set forth above, this rejection is maintained.

As a suggestion, amendment of the claim to recite "An immunogenic composition comprising a protein according to claim 4 and a pharmaceutically acceptable carrier." will be sufficient to overcome this rejection.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. The rejection of claims 2, 4, and 33-34 under 35 U.S.C. 102(b) as being anticipated by Delbac *et al* is maintained. Additionally this rejection is applied to newly added claim 35.

It is noted that this rejection is withdrawn as applied to claim 5 in view of Applicants amendment to recite "consisting of."

Applicants are asserting that Delbac et al does not show which 395 amino acids comprise the polar tube protein, the order of those amino acids, or the DNA sequence and codons which code for the amino acid of the polar tube protein. Applicants further assert that according to *In re Deuel*, the court held that the rejection of claims drawn to a particular DNA sequence is improper when the reference used in the prior art rejection fails to teach the DNA molecules. Applicants assert that Delbac et al likewise, fails to disclose the particular DNA sequences and amino acid

sequence associated with the protein that the Applicants have claimed with both an amino acid and DNA sequence. Applicants further assert that in *In re Bell* 26 USPQ2d 1529, 1532 (Fed. Cir. 1993) the existence of a general method of isolating DNA molecules is essentially irrelevant to he question whether the specific molecules themselves would have been obvious, in the absence of other prior art that suggest the claimed DNA.

Applicants have been fully considered but are not found to be fully persuasive.

Applicants arguments are not found to be fully persuasive in view of the disclosure of Delbac et al.

First, Applicants are asserting that Delbac et al does not show which 395 amino acids comprise the polar tube protein, the order of those amino acids, or the DNA sequence and codons which code for the amino acid of the polar tube protein. However, the DNA sequence is entirely irrelevant, since the claims are drawn to proteins. Furthermore, the teachings of Delbac et al are directed to the "First complete amino acid sequence of a polar tube protein in a Microsporidian species, Encephalitozoon cuniculi." (See Title). This protein was isolated by SDS-PAGE to a band of 55 kDa. It is further noted that the isolated 55 kDa band was determined to have 395 amino acids. (See right column). Given that Applicants isolated protein is from Encephalitozoon cuniculi, is a polar tube protein, with a molecular weight of 55 kDa, and has 395 amino acids, the proteins are deemed to be identical. Since the Patent office does not have the facilities for examining and comparing applicants' product with the product of the prior art reference, the

burden is on applicants to show an unobvious distinction between the material structural and functional characteristics of the claimed product and the product of the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977).

Second, Applicants assert that according to *In re Deuel*, the court held that the rejection of claims drawn to a particular DNA sequence is improper when the reference used in the prior art rejection fails to teach the DNA molecules. The Examiner whole heartedly agrees with this decision. However Applicants are directed back to the claims. No DNA claim language is to be found. Consequently, Applicants arguments are simply not germane.

Finally, Applicants assert that in *In re Bell* 26 USPQ2d 1529, 1532 (Fed. Cir. 1993) the existence of a general method of isolating DNA molecules is essentially irrelevant to he question whether the specific molecules themselves would have been obvious, in the absence of other prior art that suggest the claimed DNA. However, for the exact same reasons as above, this is not germane since none of the rejected claims recite any DNA sequence.

The claims are directed to purified microsporidian polar tube proteins comprising the amino acid sequence of SEQ ID NO: 1.

Delbac *et al* (Journal of Eukaryotic Microbiology Vol 44, No. 6, page 77S, 1997) (IDS ref AR) disclose of the purification of a 55 kDa polar tube protein from the microsporidian species, *Encephaliotzoon cuniculi*. Delbac *et al* further set forth of determining the isoelectric

point to be about 5. Delbac *et al* further set forth of expressing the protein in *E. coli* and injecting the protein in mice. (See entire article).

In view that the instantly filed application claims a microsporidian polar tube protein obtained from *Encephalitozoon cuniculi* with a molecular weight of 55 kDa and an isoelectric point of about 5, and that Delbac *et al* set forth of a microsporidian polar tube protein obtained from *Encephalitozoon cuniculi* with a molecular weight of 55 kDa and an isoelectric point of about 5, the disclosure of Delbac *et al* is deemed to anticipate the claimed invention.

It is noted that Delbac *et al* do not characterize the sequence of the isolated protein, however, in view that both the instantly claimed protein and the protein disclosed by Delbac *et al* are:

--obtained from *Encephalitozoon cuniculi*
are polar tube proteins
have a molecular weight of 55 kDa
and an isoelectric point of about 5

the sequence of the protein is deemed to inherently be that of SEQ ID NO: 1.

For reasons of record in Paper Number 15, as well as the reasons set forth above, this rejection is maintained.

The following new grounds of rejection are applied to the claims:

Claim Objections

4. Claim 2 is objected to under 37 CFR 1.75(c) as being in improper form because a dependent claim can only refer **back** to and further restrict a single preceding claim.

Claim Rejections - 35 USC § 112

5. Claims 33-35 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a written description rejection.

Claims 33-35 recite a pharmaceutical composition which prevents infections caused by microsporidians of genus Encephalitozoon comprising an active protein according to claim 4 "or a fragment thereof" and a pharmaceutically acceptable carrier.

The specification and claims do not indicate what distinguishing attributes are shared by the members of the genus. Thus, the scope of the claims includes numerous structural variants, and the genus is highly variant because a significant number of structural differences between genus members is permitted. Since the disclosure fails to describe the common attributes or characteristics that identify members of the genus, and because the genus is highly variant, SEQ ID NO: 1 alone is insufficient to describe the genus. One of skill in the art would reasonably conclude that the disclosure fails to provide a representative number of species to describe the

genus. Thus, applicant was not in possession of the claimed genus. Furthermore, since the fragment is not a full length protein, the written description is only commensurate in scope with this fragment, thus the claims are only adequately described for "consisting of" the identified fragment, since additional amino acids on the N or C terminus will have a profound effect on the activity of the protein.

Adequate written description requires more than a mere statement that it is part of the invention and a reference to a potential method of isolating it. The protein itself is required. See *Fiers v. Revel*, 25 USPQ 2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. V. Chugai Pharmaceutical Co. Lts.*, 18 USPQ2d 1016.

Applicants are directed to the Revised Interim Guidelines for the Examination of Patent Applications Under the 35 U.S.C. 112, 1 "Written Description" Requirement, Federal Register, Vol. 64, No. 244, pages 71427-71440, Tuesday December 21, 1999.

Claim 5 is objected to as depending upon a rejected base claim, however claim 5 is free of the prior art of record.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mark Navarro, whose telephone number is (703) 306-3225. The examiner can be reached on Monday - Thursday from 8:00 AM - 6:00 PM. The examiner can be reached on alternate Fridays. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Lynette Smith can be reached at (703) 308-3909.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist, whose telephone number is (703) 308-0196.

Papers related to this application may be submitted to Group 1645 by facsimile transmission. Papers should by faxed to Group 1645 via the PTO Fax Center located in Crystal Mall 1. The faxing of such papers must conform with the notice published in the official Gazette 1096 OG 30 (November 15, 1989). The CMI Fax Center number is (703) 308-4242.

Mark Navarro

Primary Examiner

September 30, 2003